smart

USER MANUAL

EUROLyser DIAGNOSTICA

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SYMBOLS AND ABBREVIATIONS

The following symbols and abbreviations are used in the product labeling and instructions for the Eurolyser laboratory photometer

Symbol/Abbreviation	Explanation
CE	Conforms with the European directive 98/79/EC on ***in vitro*** diagnostic medical devices
IVD	***In vitro*** diagnostic medical device
REF	Catalogue number/Order number
LOT	Lot number
SN	Serial number
Σ	The contents are sufficient to perform <n> number of tests
	Best used by
	Temperature limitations
	Manufacturer
	Date of production
STERILE	Sterile
	Warnings and precautions, see accompanying documents
	Operator's action
	Refer to the user's manual and follow the instructions
	Do not dispose with household waste
ERS TC	ERS Testing Cartridge
LED	Light Emitting Diode
PC	Personal Computer
ID	Identification
HIS	Hospital Information System
LCD	Liquid Crystal Display
AC	Alternating Current
DC	Direct Current
RFID	Radio Frequency Identification

Tablet 1

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INTRODUCTION

Intended use of the EUROLYSER smart laboratory photometer

The Eurolyser smart laboratory photometer is for ***in vitro*** diagnostic (clinical chemistry) use only.

The smart laboratory photometer is very compact and is designed as a point of care measuring instrument for the ERS (Eurolyser Reagent System). It is easy to use and provides quick, reliable and accurate results.

About this user's manual

This user's manual will guide you through the installation, operation and maintenance of your Eurolyser smart laboratory photometer. The user's manual also explains how the photometer works, describes the quality assurance system and assists you in troubleshooting any errors or problems.

We recommend that you familiarize yourself with these instructions before operating the Eurolyser smart laboratory photometer.

Some of the information in this user's manual is marked with following symbols:

 Operator's action

 Warnings and precautions; see accompanying documents

 Refer to the user's manual and follow the instructions

Inspecting the package contents

When unpacking the smart laboratory photometer, check the contents against the list below and examine the components for signs of shipping damage.

The smart package contains the:

- Eurolyser smart laboratory photometer
- Mains adapter, 12V DC 3A/40W
- Power cable
- User's manual

If any part of the package is missing or damaged, please report this to your supplier immediately.
We recommend that you keep the original packaging, in case the instrument ever needs to be transported.

INTRODUCTION

Description of the Eurolyser smart laboratory photometer

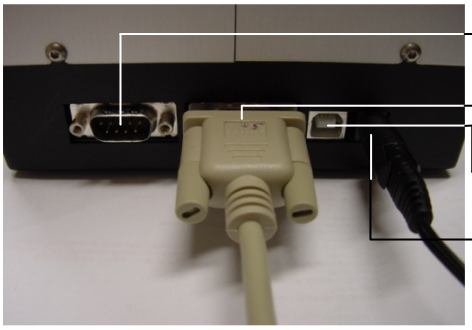
Figure 1 shows the main exterior parts of the SMART laboratory photometer (front view)

1 Touch Display:	The main user interface to operate the instrument and read the results
2 RFID Card Adapter	The RFID card is inserted here
3 Testing Panel	To insert and remove the tests
4 LED:	The green light-emitting diode (LED) is illuminated when the instrument is connected to the power source

Figure 1

⚠ **<u>Do not</u> open the panel manually**

Figure 2 describes the main exterior parts of the smart laboratory photometer (rear view)



1 RS232 socket:	Socket for an (optional) printer
2 RS232 socket:	PC connection
3 USB socket:	PC connection
4 Power socket:	Connects to the power supply

Figure 2

INTRODUCTION

How to operate the Eurolyser smart laboratory photometer

The smart laboratory photometer is operated solely by means of the touch-screen. All the basic operating steps are displayed as symbols. An overview of these symbols can be found in Table 1 and Table 2.
To activate a symbol, touch or tap it with a finger.

In order to perform a test, the RFID card enclosed in the testing kit must first be inserted into the laboratory photometer. This card contains all the data needed to perform the routine tests. No analysis can be started without the RFID test card!

The ERS cartridge is inserted into the slot in the front of the machine; the testing panel then opens automatically. After entering all the requested data and activating the ***START*** button on the touch screen, the panel closes automatically and the testing procedure begins. After the analysis is completed, the panel opens again automatically and the test cartridge can then be removed.

The panel prevents ambient light, dust, dirt and humidity from entering the laboratory photometer during the testing process and when the machine is not in use.

⚠

- **<u>Do not</u> open the panel manually**

- **Use only your fingers to touch the screen. Do not use pens or other hard or sharp objects**.

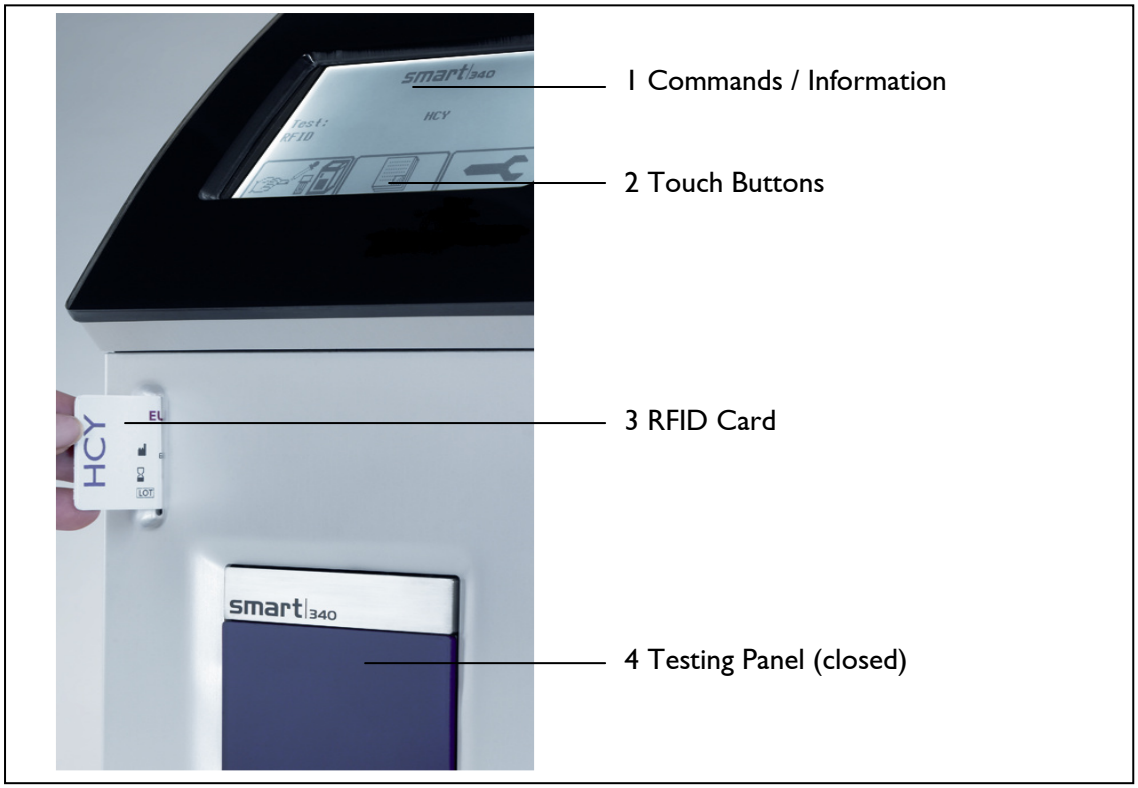


Figure 3

Screensaver

The screensaver activates after 10 minutes of idle time, dimming the touch screen. Touch the screen to re-activate it.

Indicator lights

The illuminated green diode (LED) shows that the machine is connected to the power source. The machine may be left plugged in indefinitely.

How the Eurolyser smart laboratory photometer works

The Eurolyser smart laboratory photometer is an open measuring system. That means it is able to use diverse reagents from multiple manufacturers. When tests are to be performed, the smart laboratory photometer is loaded with ERS cartridges, which are filled with reagents from the respective reagent manufacturers. The instrument can process end point tests as well as kinetic tests and – thanks to the latest LED technology – it is completely maintenance-free.

The models of smart are differentiated by the wavelengths of their built-in light sources. For example: the name "smart 546" stands for a photometer with a 546nm light source. Up to two light sources can be integrated into a photometer.

The instrument is equipped with an RFID card-reader module. RFID cards are necessary for performing any testing procedures. They are included in the testing kits from the respective test manufacturers and contain all the specific steps for the various tests, the lot data, as well as the calibration data. The instrument performs the tests automatically according to that data. Numerous types of tests can be selected and performed automatically.

The sample and the reagent are mixed automatically within the machine. The photometer unit performs the analysis with either one or two light diode(s). The absorption of light rays is measured during this process, and the measured value is then converted into the test result using mathematical methods. This result is then displayed on the touch screen. Optionally, the results can be exported to an external personal computer, an HIS, or they can be printed out using an external printer.

When the user confirms the result, the testing panel opens automatically and the ERS cartridge can then be removed and discarded. After this procedure, the instrument is ready to perform the next analysis.

Manufacturer's calibration

The Eurolyser smart laboratory photometer is manufactured according to the highest quality standards in order to yield safe and accurate testing results. Every instrument is inspected during the manufacturing process, using the EU-stipulated reference methods.

PICTOGRAMMS / TOUCH BUTTONS

The touch screen symbols and their functions

Tapping one of these symbols on the touch screen activates the described function. Every symbol that can appear while using the instrument is described here.

Symbol	Name	Function
	Start the analysis	Opens the menu so the user can make additional testing entries
^	Up	Selects one entry line or one value higher
v	Down	Selects one entry line or one value lower
...	Edit	Opens an entry or value so it can be edited
✓	Confirm	Confirms the input
X	Cancel	Cancels the input
←	Delete	Deletes the last character entered
↵	Enter	Confirms the input
Aa SYM	Selecting button	Selects upper / lower case and special characters
[x]	Option	Shows which element is selected
▶	Start	Starts the selected operation
	Printer	Starts printing
	Transmit	Starts data transmission
	Chart	Displays the photometer data of the last test
⏏	Close door	Closes the testing panel
	Results	Selects the results menu
>>	Forward	Go to the next page
<<	Backward	Go to the previous page
	Recycle bin	Go to the delete menu
	Settings	Go to the settings menu

Table 2

Additional symbols and special characters

Additional symbols or special characters that can appear on the touch screen during operation are described here. These symbols and special characters provide additional information only and cannot be activated by touching.

Symbol	Name	Function
	Insert cartridge	Command to insert the test cartridge
	Remove cartridge	Command to remove the test cartridge

Table 3

GETTING STARTED

The proper placement of the smart laboratory photometer

Place the machine on a dry, clean, stable and level surface. Make sure that the instrument has at least 10 cm of table surface and clearance on each side and that the machine can be easily disconnected from the power source. Acclimate the instrument to the ambient room temperature before operating it.

The instrument can be damaged by:
- **Condensing humidity and water**
- **Heat and large temperature fluctuations**
- **Direct sunlight**
- **Vibrations (e.g. from centrifuges and dishwashers)**
- **Electromagnetic radiation (e.g. from mobile phones)**

Connecting the power supply

- Connect the power cable to the power supply unit.
- Insert the plug from the power supply unit into the power socket on the back of the machine (Figure 4).
- Plug the power cable into the wall socket.

Always connect to the proper supply voltage. The power supply voltage must comply with the regulations cited in the technical specifications on page 27. The instrument is to be operated only using the power supply unit provided.

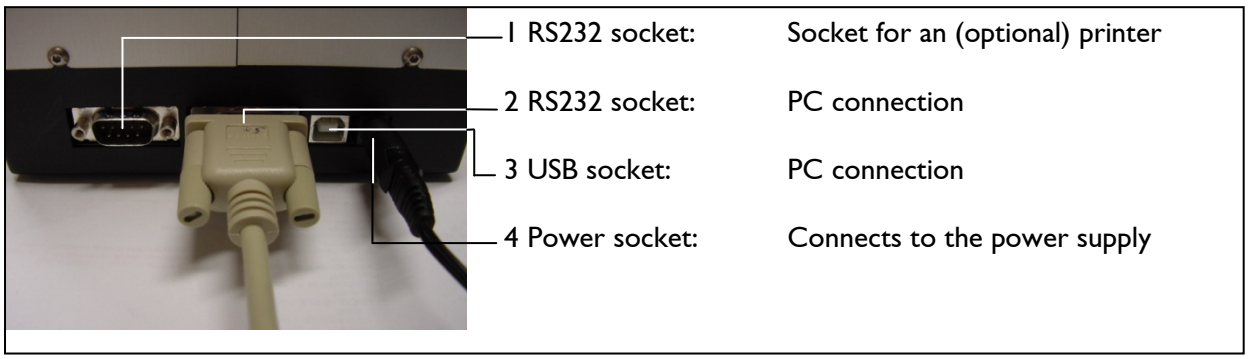


Figure 4

Connecting optional equipment

The following optional devices – which are not included in the standard delivery package – can be connected to the instrument:

- An external printer – for optional test result printouts
- An external barcode scanner
- A PC – for the transfer of test data into an HIS or laboratory software

We recommend the DPU-414 from SEIKO as an optional printer, as described in the "Technical specifications" section on page 27.

Connect optional equipment only when the instrument is switched off.
Please note that attaching optional equipment (e.g. a printer) can increase the amount of leakage current. All optional equipment must be connected before such leakage current can be measured.

GETTING STARTED

If the device is not used according to the instruction manual, then the provided levels of safety will be lowered.

How to switch ON the EUROLYSER smart laboratory photometer

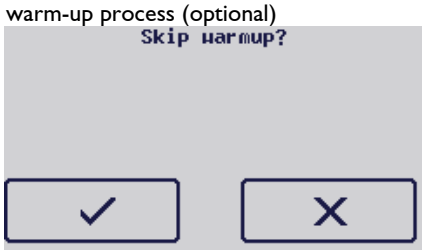
The machine is switched on by plugging the power cable into the socket. This launches the device's automatic start-up and warm-up processes. Please wait for these to be completed (approximately 15 minutes).

<u>Do not</u> open the testing panel manually

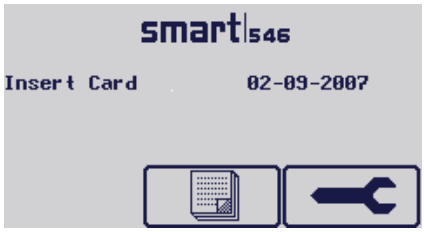
The automatic start-up and warm-up processes

1. Warm-up menu

2. Interrupting the warm-up process (optional)



3. Start-up menu



The automatic start-up procedure starts as soon as the device is connected to the power supply. The machine is warmed up to its proper working temperature in approx. 15 minutes.

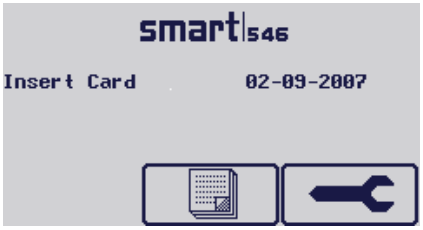
If you want to interrupt the warm-up process, just touch **warm-up**. A submenu appears; press ✓ to interrupt. However, if you don't want to interrupt the process, press ✗

As soon as the entire progress bar turns gray and the initialization of the optical unit is completed (in a few more seconds), the start-up menu appears. The instrument is now operational.

Configuring the photometer

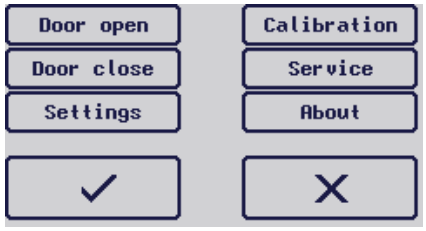
You can configure your Eurolyser smart laboratory photometer according to your needs before you begin using it. To go to the configuration menu, follow these steps:

1. Start-up menu



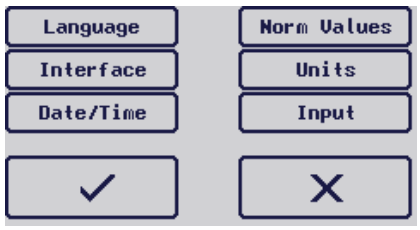
Touch  to go to the Settings menu

2. Settings menu



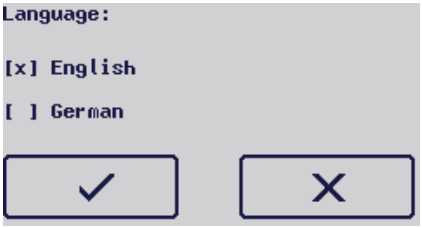
Touch **Settings,** to go to the Settings/Configuration menu

3. Configuration menu



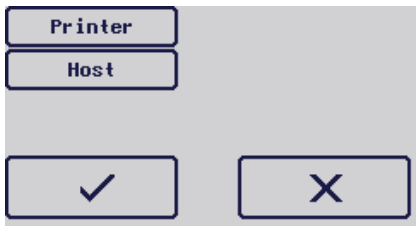
Touch the setting you want to configure and confirm it with ✓

4. Language menu



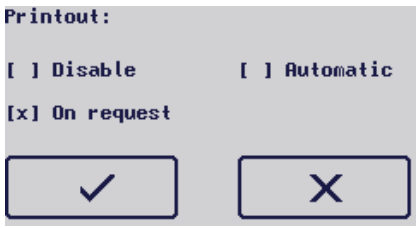
Touch the preferred language and confirm it with ✓

5. Interface menu



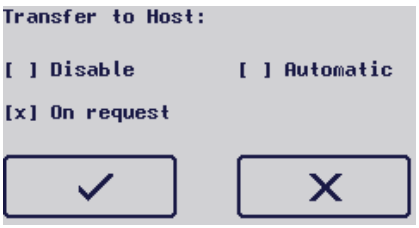
Select the interface you want to configure. Choose ***Printer*** to configure transmission to a connected printer. Choose ***Host*** to configure transmission to a host (e.g. a PC).

6. Interface printer menu



If a printer is connected:
Disable = printouts will never be provided.
Automatic = the results will be printed out after every measurement.
On request = printouts will only be provided on demand.

7. Interface host menu

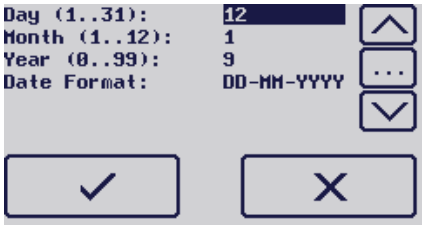


If a host (e.g. a PC) is connected:
Disable = data will never be transmitted to the host.
Automatic = the results will be transmitted to the host after every measurement.
On request = data will only be transmitted upon request.

8. Date menu

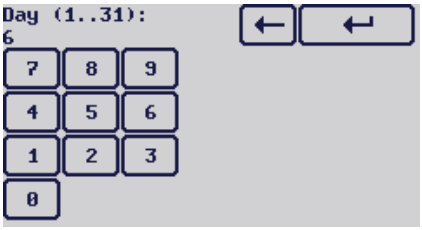
Touch ... to go to the Date detail and Time detail menus

9. Date detail menu



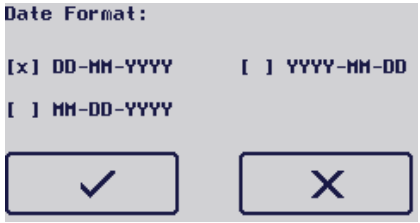
Touch ... to go to the Date detail menu. Use ⌄ or ⌃ to navigate on the screen

10. Day date menu



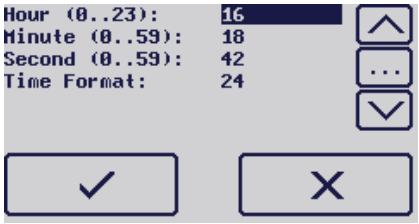
Touch the desired digits and confirm the selected date with ↵

11. Date format menu



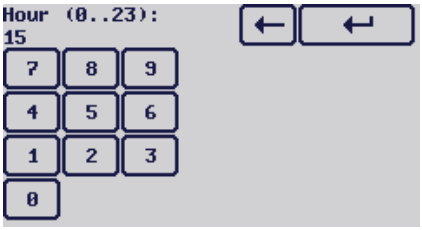
Select your preferred date format.
DD = Day
MM = Month
YYYY = Year

12. Time detail menu



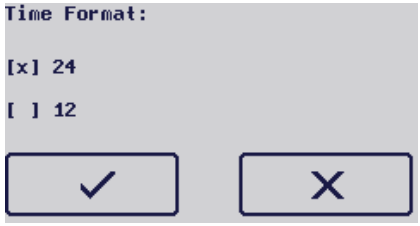
Touch ... to go to the Time input or Time format menus.
To navigate within the screen, use ∨ and ∧.

13. Time input menu



Touch the digits to enter the time and confirm your selection with ↵

14. Time format menu

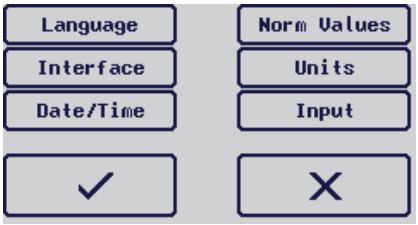


Select either the 12-hour time format (1 – 12 AM/PM) or the 24-hour time format (0 – 23)

To exit a menu or to cancel an input, use ✕

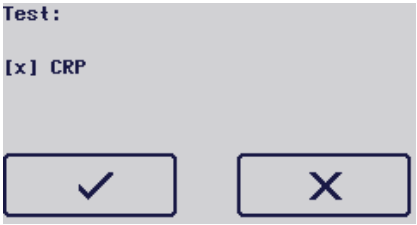
Setting the normal values and the units, using a CRP test as demonstration

1. Configuration menu



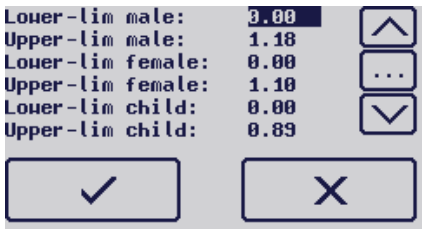
Touch **Norm Values** and confirm your selection with ✓

2. Test selection menu



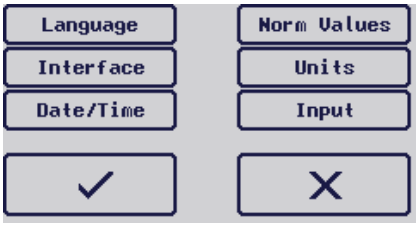
Confirm the selection of CRP with ✓

3. Limits menu



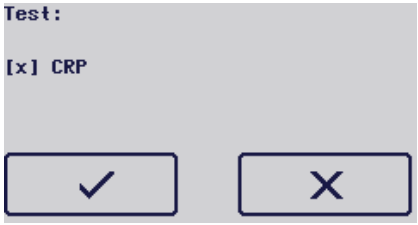
Touch ... to go to the numerical entry screen of the Limits menu.
Use ∨ and ∧ to navigate within the screen

4. Configuration menu



Touch **Units** and confirm the selection with ✓

5. Test selection menu



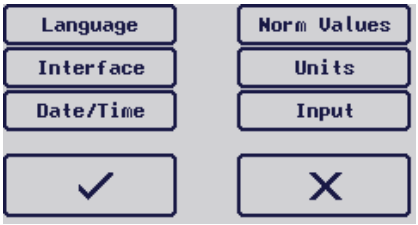
Confirm the selection CRP with ✓

6. Units selection menu

Touch the selected unit and confirm it with ✓

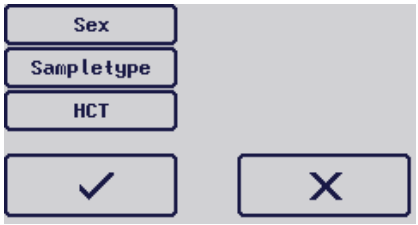
⚠ **This description is only an example, as the configuration of the Eurolyser laboratory photometer models varies, depending on how they are equipped.**

7. Configuration menu



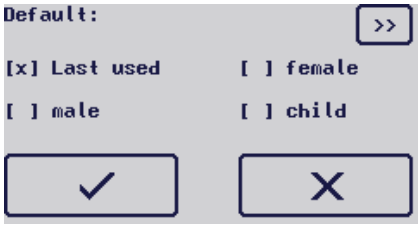
Touch **Input** and confirm the selection by pressing ✓

8. Input menu



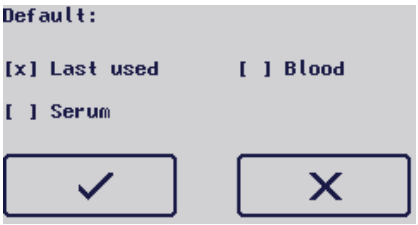
Select which values to change from the Input menu.

9. Default gender menu



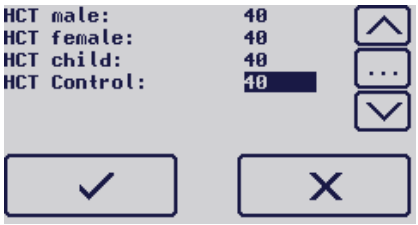
Select which gender is to be used as the standard default. ***Last used*** means that the gender last used will always be selected.

10. Default sample type menu



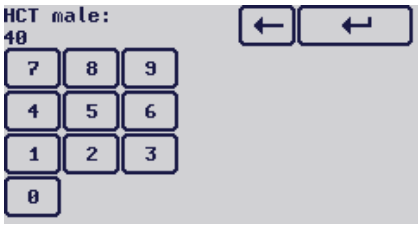
Select which type of sample should be marked by default. ***Last used*** means the sample type last used will be selected.

11. Default HCT menu



Using ⌄ or ⌃ choose which HCT value to change. By pressing … you can change the value in the HCT default input menu

12. HCT default input menu



Enter the hematocrit value and confirm it by pressing ↵. If no value is given, the analyzer uses the value 40 by default.

How to switch OFF the analyzer

Completely turning off the instrument can only be accomplished by disconnecting it from the power supply. It is not necessary to switch the analyser off every day. When the instrument is in start screen mode, the "power safe" function dims the screen after it has been idle for 10 minutes. Touching the screen will re-illuminate it to its customary level of brightness.

TESTING PROCEDURES

Overview of the testing and measuring procedures

Allow the ERS test cartridge to come to room temperature before use. If the smart laboratory photometer has been disconnected from the power supply, plug it in soon enough for it to be at the proper operating temperature when it is needed.

How to run a control test, if necessary:

- Insert the RFID card from the testing kit into the slot on the front of the machine
- Prepare the control serum according to the instructions on the control package insert
- Enter the lot number instead of the patient data
- Prepare the test just like a patient sample and start the analysis
- The result is displayed
- Record the result according to your laboratory's quality guidelines
- The result will be saved in the instrument's memory – just like a patient's results
- Verify that the result lies within the mandatory limits for the control material (according to the control material's package insert)

To analyze a patient sample:

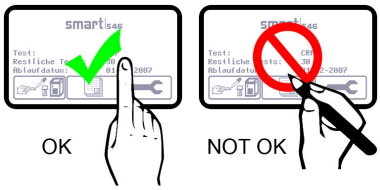
- Insert the RFID card from the testing kit into the machine
- Prepare a test cartridge and a patient sample according to the instructions on the testing kit insert
- Enter the required patient data
- Insert the test cartridge into the analyzer and start the analysis
- The result will be displayed
- The result will be saved in the instrument's memory
- Export the result to an (optional) external computer, or print the result with an (optional) external printer

Be sure to follow the detailed instructions for the analysis processes that are provided in the following sections and to comply with the information provided on the package insert enclosed with each testing kit.

TESTING PROCEDURES

Operating safety precautions:

When operating the laboratory photometer:



- **Use only your fingertip to operate the touch screen. Do not use pens or any other objects that may scratch or damage the screen.**
- **The testing panel opens and closes automatically. Do not try to open or close the panel manually.**
- **The panel protects the analysis system from dust, dirt and humidity. Empty the panel's cartridge chamber after every analysis and keep it closed when the machine is not in use.**
- **If an error message appears on the screen during an analysis, please consult the "Troubleshooting" section on page 25.**

When handling a test cartridge:

- **Do not use test cartridges after their expiration date, or when the test cartridges have not been stored in accordance with the regulations.**
- **Do not use the test cartridge if the packaging is damaged or if fluids have leaked.**
- **The test cartridge must reach room temperature (15-30°C, 59-86°F) before use.**
- **Never allow a test cartridge to remain at room temperature for a long period, as this may affect its stability and lead to inaccurate test results**
- **Use gloves when handling and disposing of the test cartridges, patient samples and sample collection equipment, because they pose a potential biohazard**
- **Do not re-use the test cartridges**
- **Use only test cartridges that have been approved or specified by the manufacturer**
- **Test cartridges that have been approved by the manufacturer are listed in Eurolyser Diagnostica's product list. This product list can be obtained from the Downloads page at www.eurolyser.com.**

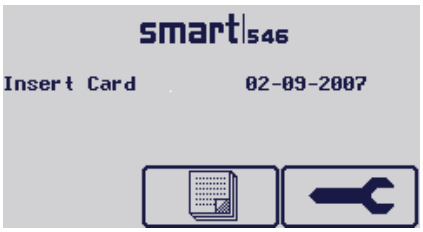
See the package insert that comes with all test cartridges suitable for use with the Eurolyser smart laboratory photometer and follow all instructions regarding:

- the proper temperature a cartridge must have before a test is performed
- the exact amount of the sample volume
- the regulations for the proper storage of the test cartridges
- the stability of the test cartridges and their expiration date
- the sequence of the testing procedures

TESTING PROCEDURES

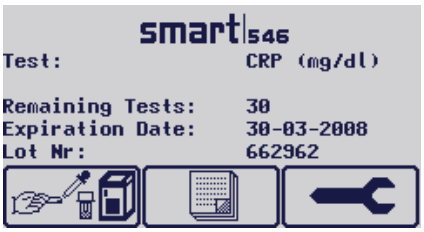
Analyzing a patient's sample

1. Start-up menu



Take the provided RFID card out of the testing kit package and insert it into the analyzer

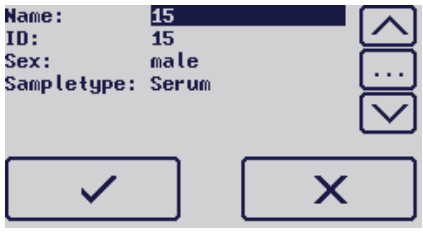
2. Main menu



The analyser automatically reads the card, displays the type of test, number of tests, the expiry date and lot number.

Touch  The panel opens automatically and the input menu appears.

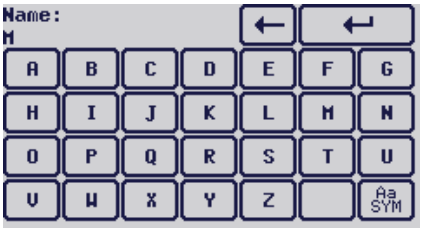
3. Input menu



Touch **...** The ABC menu appears. To navigate within the input menu, use ⌄ and ⌃

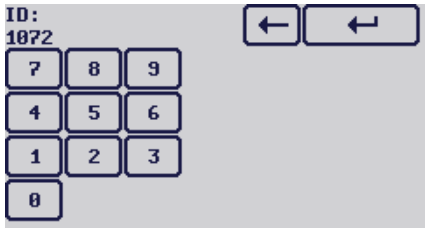
To leave a menu or to cancel an entry, touch ✕

4. ABC menu



Enter the name and confirm the entry with ↵. To delete an incorrect entry, use ←

5. Numeral menu



Enter the patient ID and confirm it with ↵. To delete an incorrect entry, use ←

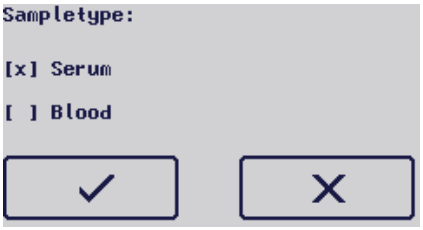
6. Input menu – Gender / Control

Touch **Male**, **Female**, **Child** or **Control** and confirm the selection with ✓

TESTING PROCEDURES

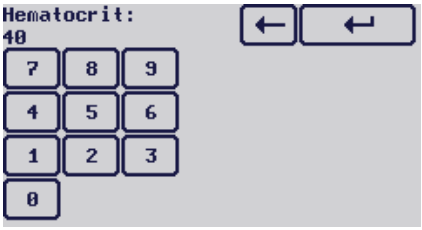
Analyzing a patient's sample (cont'd)

7. Sample type menu



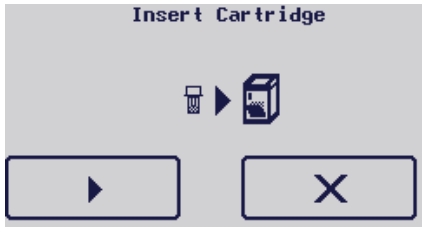
Touch **Serum** or **Blood** and confirm the selection with ✓

8. Hematocrit menu (for all tests)



Enter the hematocrit value and confirm it with ↵.
If you do not enter a value, the analyzer uses a default value of 40

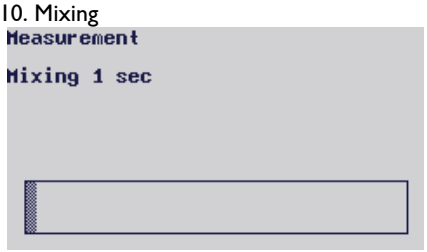
9. Start analysis menu



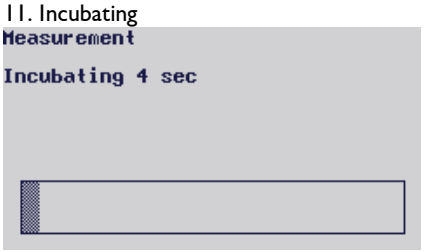
Fully insert the test cartridge into the analyzer. Touch ▶ The panel closes and the test is performed automatically.

The instrument displays the following information during the automatic testing process (no user input necessary)

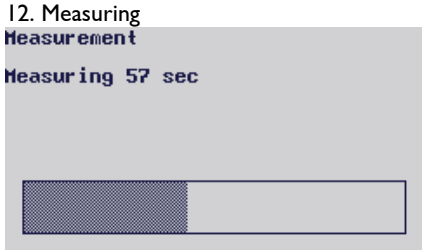
10. Mixing



11. Incubating



12. Measuring

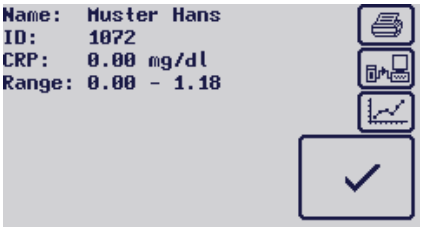


⚠
- **Be sure to handle the test cartridge according the instructions on the package insert.**
- **Be sure the test cartridge is properly sealed before you insert it into the analyzer.**
- **Be sure the test cartridge is fully inserted into the proper opening in the analyzer.**
- **Use ONLY manufacturer-approved test cartridges, otherwise serious damage to the smart photometer or inaccurate test results may occur**
- **Do not attempt to open or close the panel manually.**

Viewing and processing the test results

The smart laboratory photometer can store up to 100 patient and control results in its memory. When this capacity is exceeded, the oldest results are deleted in chronological order. The following parameters are saved from each test:

1. Single result menu



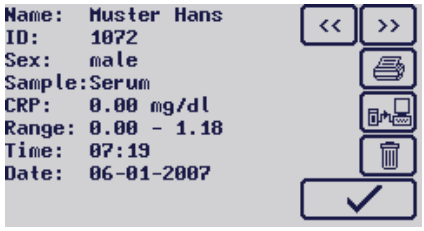
The result is shown. Touch 🖶 to print it out. Touch 🖧 to export it to an LIS or PC, or touch 📈 to display the photometric data. Touch ✓ to close the menu and end the test.

2. Remove cartridge menu

The analyser automatically opens the testing panel. Remove the test cartridge and discard it. Touch ⏏ to close the panel. The main menu appears.

Touch 📄 to go to the overall result menu.

3. Overall result menu



To scroll through the menu, touch >> or <<. Touch 🖶 to print the result; touch 🖧 to send it electronically. Touch 🗑 to delete the result. You can return to the main menu with ✓

QUALITY CONTROL

A quality control program should be performed on a regular basis to verify the Eurolyser smart laboratory photometer is working properly and providing reliable results. Data integrity can only be assured when controls and GCLP practices are used routinely. The frequency of performing QC differs from laboratory to laboratory; please comply with your national quality control regulations.

Choosing quality control (QC) materials

The authorized manufacturers of the smart test cartridges also supply control materials. These control kits contain control materials, which allow you to assess the measuring accuracy of the instrument.

Ensure the measuring methods are compatible with the Eurolyser smart laboratory photometer before using QC kits from other suppliers.

The measuring methods are listed on the test cartridge's package insert.

Handling the QC control materials

Consult the package insert that comes with each control kit for detailed instructions on the storage and handling of the control materials.

Follow the instructions in the "Testing procedures/Analyzing a patient's sample" sections (pp. 15-18) on how to properly perform a control test. The measured values must be within the range of target values specified on the control vial label or in the control package insert. If the control results fall within the specified range, the testing of patient samples may begin.

If one or more controls tested outside the specified control range:

- Verify that the control materials have been stored according to the directions and that the expiration date has not passed
- Verify that the handling and testing procedures were performed according to the directions on the package insert
- Repeat the control test, using a new control from the same lot

If one or more control results are still outside the specified range;

- Perform a test using a control from a new lot

If the above instructions have been followed, but the control results are still not within the permitted range, contact your local Eurolyser smart laboratory photometer supplier for assistance before proceeding with tests on any patient samples.

Frequency of QC testing:

Control testing is recommended when:

- a new shipment of testing kits is about to be used
- a new lot is about to be used
- if it's possible that the test cartridges have not been properly stored
- if an unexpected patient result is obtained
- when new personnel is being trained to use the equipment
- if local regulations require more frequent control testing than described above, then the number of control tests performed must comply with these regulations

CALIBRATION

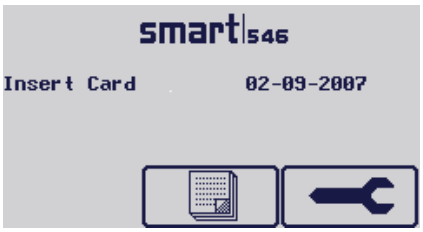
If control testing with the proper control materials produces results that are outside the prescribed ranges, then the instrument must be calibrated.

The instrument is set to perform either an automatic calibration using a calibration kit or a manual calibration by entering a factor

You'll need the proper calibration kit to perform an automatic calibration. The kits differ depending on the type of test being performed. Please follow the instructions in the calibration kit's package insert.

Performing an automatic calibration

1. Start-up menu



Touch  to go to the Settings menu

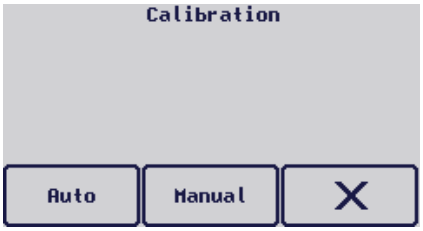
2. Settings menu

Touch **Calibration** to go to the Calibration options menu

3. Calibration options menu

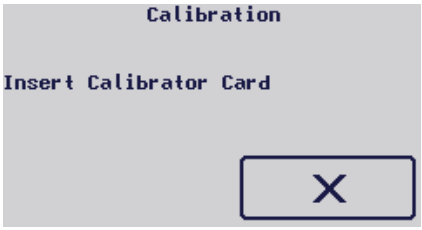
Select **Test kit** to go to the Calibration options menu

4. Calibration options menu



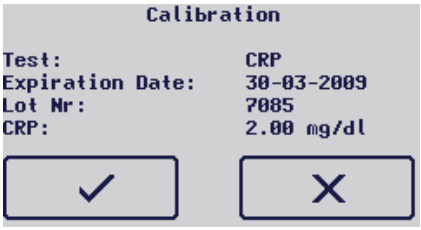
To perform an automatic calibration, touch **Auto**

5. Calibration card menu



The instrument asks you to insert the calibration RFID card supplied with the calibration kit.

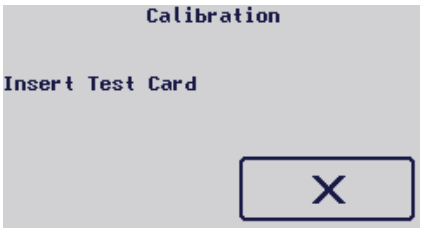
6. Calibration data menu



The instrument reads the calibration data from the card. Confirm it with ✓

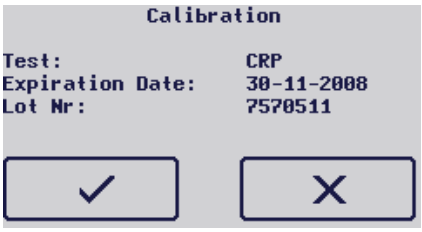
CALIBRATION

7. Insert test card menu



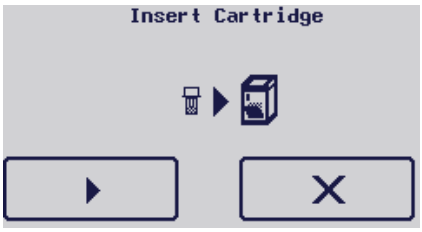
Insert the test RFID card supplied with the testing kit. The confirmation menu appears

8. Confirmation menu



Confirm the data of the test to be calibrated with ✓

9. Start analysis menu



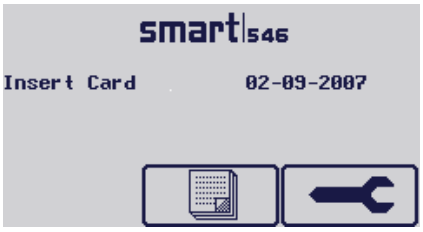
Fill the test cartridge with the calibration material according to the instructions on the calibration kit's package insert. Insert the cartridge and touch ▶.
The calibration will be performed automatically

⚠ **Note: the calibration applies only to the respective testing kit being used!**

If the above instructions have been followed, but the control results are still not within the permitted range, contact your local Eurolyser smart laboratory photometer supplier for assistance before performing the next test on a patient's sample.

Performing a manual calibration

1. Start-up menu



Touch  to go to the Settings menu

2. Settings menu

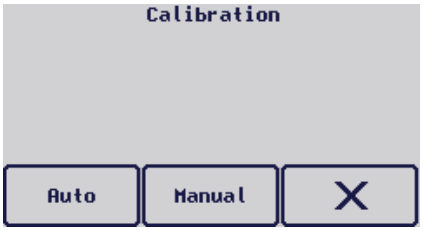
Touch **Calibration** to go to the Calibration options menu

3. Calibration options menu

Select **Test kit** to go to the Calibration options menu

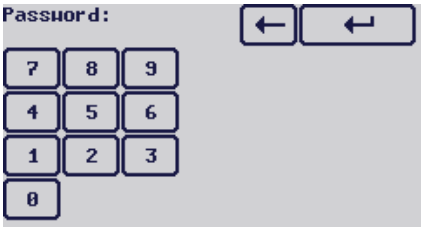
CALIBRATION

4. Calibration options menu



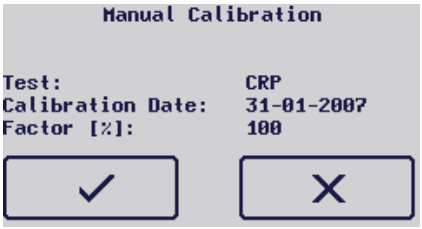
To perform a manual calibration, touch **Manual**

5. Password menu



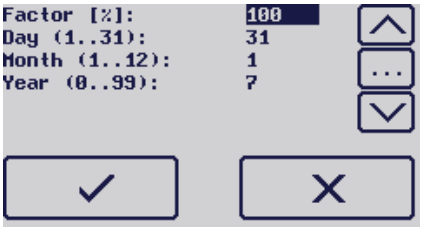
Enter the password.
The default setting is 3010.
Confirm it with ↵

6. Manual calibration menu



The data of the testing kit to be calibrated is displayed.
Confirm it with ✓

7. Detail entry menu



Change the factor according to the difference from the target value of a control serum.
Confirm it with ✓

Example of how to determine the manual calibration factor

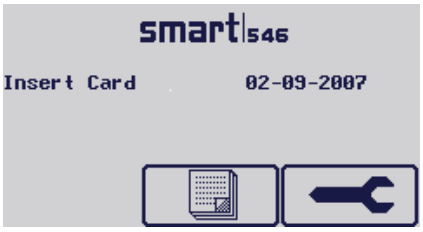
The calibration factor can be determined empirically by analysing a control serum:
The target value of the control serum is e.g.: 3.6mg/l – 6.4mg/l
The measured value of the control serum is e.g.: 8.00 mg/l
In this case, the instrument produces a result that is too high, so that means that the calibration factor must be decreased (the default value is 100).
Decrease the calibration factor by 5 units.
The default value is 100, so set the new factor at 95 and repeat the measurement of the control serum.

If the result is still outside the control serum's specified range, then decrease the factor by another 5 units and repeat the procedure.

CALIBRATION

Performing an instrument calibration

1. Start-up menu



Touch  to go to the Settings menu

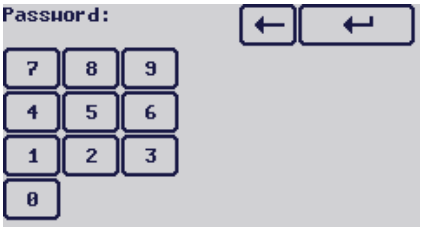
2. Settings menu

Touch **Calibration** to go to the Calibration options menu

3. Calibration options menu

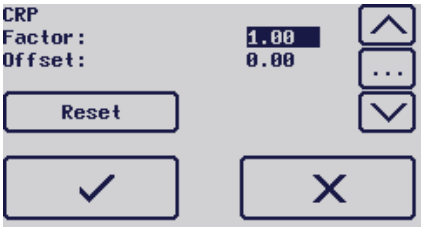
Select **Instrument** to perform an instrument calibration

4. Password menu



Enter the password.
The default setting is 3010.
Confirm it with ↵

5. Factor and Offset input menu



Enter the factor and the offset accordingly.
Confirm them with ✓

INTERFACE DESCRIPTION

SERIAL INTERFACE:

Interface signals

Pin	Signal
1	
2	TxD
3	RxD
4	
5	GND
6	
7	
8	
9	

Interface parameters

Parameter	Value
Baud rate	9600
Data bits	8
Parity	None
Stop bits	1

Data format

Data is transmitted in blocks of data sets.
One data set contains the data from one analysis.
Data sets consist of data fields.
A data field consists of an identifier (7 characters) and its respective value or text.
Data fields are concluded with one carriage return and line feed.
Data sets are concluded with three carriage returns and line feeds.

Data Fields

Identifier	Format	Example	Remarks
Name:	Text	Name: John Doe	
ID:	Text	ID: 1234	
Sex:	Male/Female/Child/Control	Sex: Male	
Sample:	Serum/Blood	Sample:Blood	Optional
HCT:	Value	HCT: 40	Optional
Testname:	Value and unit	CRP: 2.48 mg/dl	
Range:	Value - Value	Range: 0.00 - 1.00	Optional
Time:	hh:mm	Time: 14:44	
Date:	dd-mm-yyyy	Date: 08-02-2007	

USB Interface:

The USB interface emulates the serial interface

ERROR INFORMATION AND TROUBLESHOOTING

Error messages and possible causes

Error message	Cause	Correction
- Invalid card	A wrong, defective or expired RFID card A defective RFID module	Use a new testing kit Contact your dealer
- No results	No test results are stored	Perform the test
- Invalid calibration	The calibration values are outside the prescribed range. An error occurred during calibration.	Repeat the calibration with a new testing kit or a new calibrator. If the problem recurs, contact your dealer.
- Tests expired	The test cartridge has passed its expiration date.	Use a cartridge from a new testing kit that has not expired.
- Calibration required	The calibration interval has been exceeded	Perform a new calibration
- Door blocked	The test cartridge is blocking the testing panel because the cartridge has not been inserted completely or the cuvette has not been capped firmly enough.	Reposition the test cartridge or tighten the cap on the cuvette.
- Wrong cap Missing cap Missing cartridge	The wrong ERS cap is being used or the ERS cap is missing or the cartridge is missing	Use the correct ERS cartridge and cap
- Latch blocked	The test cartridge blocks the latch because the wrong ERS cap is being used.	Use the correct ERS cartridge and cap
- Measurement overflow	The photometric measurement value is outside the measuring range (e.g. if a cold cartridge has been used)	Repeat the test using a new cartridge
- Blank value error	The photometric measurement value is outside the measuring range (without the cartridge)	Repeat the test after restarting the machine
- Temperature error	The temperature is outside the range	Repeat the test after restarting the machine
- Wrong sample type?	The wrong sample type has possibly been selected	Select the correct sample type
- Linearity error	The reaction to a kinetic test is not linear (e.g. if a cold cartridge has been used)	Repeat the test using a new sample and a new cartridge

ERROR INFORMATION AND TROUBLESHOOTING

Service information

If the problem persists after the corrective actions are taken, contact your local smart laboratory photometer dealer for technical assistance.

Before asking for assistance, please have the following information ready:

- the serial number of your smart laboratory photometer
- the test type
- the test lot number
- the control lot number
- the control results obtained so far
- a description of the problem, including any of the smart's error messages

TECHNICAL SPECIFICATIONS

Eurolyser smart laboratory photometer

Photometer resolution	0.0001 ABS
Reproducibility	<1.5% CV at 1 OD
Linearity	0.1000 – 3.0000 OD better than +/- 1.5% and +/- 0.01 OD
Temperature control	Electrical temperature control of the photometer unit to 37°C +- 2°C
Display	Standard LCD display with back light and integrated touch panel
Buffer battery	BR2032
Fuse	2.5 amperes, self-healing
Dimensions	260 x 145 x 140 cm (H x B x T)
Weight	3.5 kg (unpackaged)
Communications interface	RS232, USB
Tolerance conditions:	Work space: 15 - 28°C; relative humidity: 10 – 90%
	Transport/Storage: 0 - 50°C; relative humidity: 5 – 95%
Work surface:	A dry, clean, level surface. Avoid direct sunlight

Power supply

		Alternatively
Manufacturer	Mascot	Globtek
Type	9921	GTM21097-5012
Mains adapter	A separate AC to DC mains adapter with double insulation	
Input	100-230V AC, 50-60 Hz	90-264V AC, 47-63 Hz
Output	12 V DC, 3A	12V DC, 4.17A
Power usage	Max. 30 VA	Max. 30 VA

Options

Thermo printer	Seiko DPU-414
Interface	Serial
Mains adapter	100-240 VAC
Barcode reader (scanner)	Datalogic Touch65
Reading area	63mm
Max. resolution	0.10mm (4mils)
Mains adapter	100-240 VAC
IP rating	IP – Safety Class III

DECLARATION OF CONFORMITY

CE

Declaration of conformity with IVD directives

The Eurolyser SMART laboratory photometer is in compliance with all provisions in the directive 98/79/EC on In Vitro Diagnostic medical technology products and is CE-marked as conforming to standards.

Safety standards

The Eurolyser SMART laboratory photometer has been tested and conforms to the safety standards IEC/EN 61010-1, IEC/EN 61010-2081 and IEC/EN 61010-2-101, as well as to the EMC standard IEC/EN 61326

MANUFACTURER DATA

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